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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/553,132

10/14/2005

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HESL0101PUSA

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09/05/2008

EXAMINER

CHAPEL, DEREK S

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/553,132	Applicant(s) HESLINE, RAYMOND	
	Examiner DEREK S. CHAPEL	Art Unit 2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 4/2/08, 4/3/08, 5/15/08, 5/16/08, 5/20/08.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 13-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 October 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status Of Claims

1. This Office Action is in response to an amendment received 5/15/2008 in which Applicant lists claims 1-12 as being cancelled and claims 13-20 as being currently amended. It is interpreted by the examiner that claims 13-20 are pending.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submissions filed on 4/3/2008 and 5/15/2008 have been entered.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

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2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 13-16 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhao et al., U.S. Patent Application Publication 2003/0113055 A1 (hereafter Zhao) in view of Hesline, U.S. Patent Number 5,864,428, of record (hereafter Hesline).

6. As to claims 13 and 14, Zhao discloses an optical device (see at least figure 2) comprising a first birefringent prism (see at least figure 2, element 12; it is noted that since the "beam displacer/combiner" (12) splits the light based on the polarization states it must be birefringent) for dividing an optical input beam into polarized beams (see at least figure 2, element 12), a second birefringent prism (see at least figure 2, element 13; it is noted that since the "beam displacer/combiner" (13) splits the light based on the polarization states it must be birefringent) for combining polarized beams into an output beam (see at least figure 2, element 13), and a polarization changer disposed between said first birefringent prism and said second birefringent prism (see at least figure 2, elements 14, 15, 16 or 17), further comprising a third birefringent prism (see at least figure 2, element 20; it is noted that since the "polarization walk-off crystal" (20) splits the light based on the polarization states it must be birefringent) disposed between said polarization changer and said second birefringent prism (see at least figure 2, elements 14, 16, 20 and 13).

Zhao does not specifically disclose that each of the first, second and third birefringent prisms are combinations of birefringent prisms with parallel optic axes

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wherein each said combination of birefringent prisms has oblique input and output faces.

However, Hesline teaches using a combination of birefringent prisms, with parallel optic axes wherein the combination of birefringent prisms has oblique input and output faces, to split an input beam into two parallel output beams (see at least figure 4, elements 31 and 35 as well as column 3, line 46 through column 4, line 6 of Hesline; it is noted that the birefringent prisms of Hesline are reciprocal and therefore could be used in reverse to combine two parallel input beams into one output beam).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the optical device of Zhao to include the teachings of Hesline so that each of the first, second and third birefringent prisms are replaced with first, second and third combinations of birefringent prisms with parallel optic axes wherein each said combination of birefringent prisms has oblique input and output faces, for the purpose of conserving the amount of birefringent material used in the optical device, as taught by Hesline (see at least column 1, lines 56-67 and column 2, lines 7-17 of Hesline).

7. As to claim 15, Zhao in view of Hesline discloses that the prisms of at least one combination of birefringent prisms are arranged about at least one reflector or refractor (see at least figure 2 of Zhao, first and second combinations of birefringent prisms 12 and 13 arranged about element 19).

8. As to claim 16, Zhao in view of Hesline discloses that the prisms of at least one combination of birefringent prisms are arranged about a polarization changer (see at

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least figure 2 of Zhao, first and second combinations of birefringent prisms 12 and 13 arranged about elements 14, 16, 17 and 15).

9. As to claim 20, Zhao in view of Hesline discloses that said device is an optical switch (see at least the title and abstract of Zhao), wherein light entering a first port of said device exits through a second port of said device or through a third port of said device (see at least paragraphs [0012], [0021], [0023] and [0031] of Zhao) as determined by a switching means (see at least figure 2, elements 16 and 17 of Zhao), wherein at least one polarization changer of said device is a reciprocal polarization changer (see at least figure 2, elements 14 and 15 as well as paragraph [0041] of Zhao).

10. Claims 13, 15-16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu et al., U.S. Patent Application Publication Number 2003/0020989 A1 (hereafter Liu) in view of Hesline, U.S. Patent Number 5,864,428, of record (hereafter Hesline).

11. As to claim 13, Liu discloses an optical device (see at least figure 14) comprising a first birefringent prism (see at least figure 14, element 1402a) for dividing an optical input beam into polarized beams (see at least figure 14, element 1402a), a second birefringent prism (see at least figure 14, element 1402b) for combining polarized beams into an output beam (see at least figure 14, element 1402b), and a polarization changer disposed between said first birefringent prism and said second birefringent prism (see at least figure 14, elements 1415a and 1415b).

Liu does not specifically disclose that each of the first and second birefringent prisms are combinations of birefringent prisms with parallel optic axes wherein each said combination of birefringent prisms has oblique input and output faces.

However, Hesline teaches using a combination of birefringent prisms, with parallel optic axes wherein the combination of birefringent prisms has oblique input and output faces, to split an input beam into two parallel output beams (see at least figure 4, elements 31 and 35 as well as column 3, line 46 through column 4, line 6 of Hesline; it is noted that the birefringent prisms of Hesline are reciprocal and therefore could be used in reverse to combine two parallel input beams into one output beam).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the optical device of Liu to include the teachings of Hesline so that each of the first and second birefringent prisms are replaced with first and second combinations of birefringent prisms with parallel optic axes wherein each said combination of birefringent prisms has oblique input and output faces, for the purpose of conserving the amount of birefringent material used in the optical device, as taught by Hesline (see at least column 1, lines 56-67 and column 2, lines 7-17 of Hesline).

12. As to claim 15, Liu in view of Hesline discloses that the prisms of at least one combination of birefringent prisms are arranged about at least one reflector or refractor (see at least figure 14 of Liu, first and second combinations of birefringent prisms 1402a and 1402b arranged about at least element 1430; it is noted that element 1430 is optically between 1402a and 1402b).

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13. As to claim 16, Liu in view of Hesline discloses that the prisms of at least one combination of birefringent prisms are arranged about a polarization changer (see at least figure 14 of Liu, first and second combinations of birefringent prisms 1402a and 1402b arranged about elements 1415a and 1415b).

14. As to claim 18, Liu in view of Hesline discloses that said device is an optical attenuator (see at least paragraphs [0031] and [0139]-[0141] of Liu), wherein light entering a first port of said device exits through a second port of said device with an intensity as determined by an intensity varying means (see at least paragraphs [0031] and [0139]-[0141] of Liu), wherein at least one polarization changer of said device is a reciprocal polarization changer (see at least figure 14, elements 1415a and 1415b).

15. Claims 13, 16-17 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pan et al., U.S. Patent Application Publication Number 2003/0147136 A1 (hereafter Pan) in view of Hesline, U.S. Patent Number 5,864,428, of record (hereafter Hesline).

16. As to claim 13, Pan discloses an optical device (see at least figure 1A) comprising a first birefringent prism (see at least figure 1A, element 110 as well as paragraphs [0031]-[0033] and [0047]) for dividing an optical input beam into polarized beams (see at least figures 1A, 1B and 1C, element 110 as well as paragraphs [0031]-[0033] and [0047]), a second birefringent prism (see at least figure 1A, element 170 as well as paragraphs [0031]-[0033] and [0047]) for combining polarized beams into an output beam (see at least figures 1A, 1B and 1C, element 170 as well as paragraphs

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[0031]-[0033] and [0047]), and a polarization changer disposed between said first birefringent prism and said second birefringent prism (see at least figure 1A, elements 120, 130, 150 and 160).

Pan does not specifically disclose that each of the first and second birefringent prisms are combinations of birefringent prisms with parallel optic axes wherein each said combination of birefringent prisms has oblique input and output faces.

However, Hesline teaches using a combination of birefringent prisms, with parallel optic axes wherein the combination of birefringent prisms has oblique input and output faces, to split an input beam into two parallel output beams (see at least figure 4, elements 31 and 35 as well as column 3, line 46 through column 4, line 6 of Hesline; it is noted that the birefringent prisms of Hesline are reciprocal and therefore could be used in reverse to combine two parallel input beams into one output beam).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the optical device of Pan to include the teachings of Hesline so that each of the first and second birefringent prisms are replaced with first and second combinations of birefringent prisms with parallel optic axes wherein each said combination of birefringent prisms has oblique input and output faces, for the purpose of conserving the amount of birefringent material used in the optical device, as taught by Hesline (see at least column 1, lines 56-67 and column 2, lines 7-17 of Hesline).

17. As to claim 16, Pan in view of Hesline discloses that the prisms of at least one combination of birefringent prisms are arranged about a polarization changer (see at

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least figure 1A of Pan, first and second combinations of birefringent prisms 110 and 170 arranged about elements 120, 130, 150 and 160).

18. As to claim 17, Pan in view of Hesline discloses that said device is an optical isolator (see at least paragraphs [0003] and [0005] of Pan), wherein light entering a first port of said device exits through a second port of said device, wherein light entering said second port does not exit through said first port (see at least paragraphs [0003], [0005] and [0032] of Pan), wherein at least one polarization changer of said device is a nonreciprocal polarization changer (see at least figure 1A, elements 120 and 160 as well as paragraph [0031] of Pan).

19. As to claim 19, Pan in view of Hesline discloses that said device is an optical circulator (see at least the title and abstract of Pan), wherein light entering a first port of said device exits through a second port of said device, wherein light entering said second port exits through third port of said device (see at least paragraph [0032] of Pan), wherein at least one polarization changer of said device is a nonreciprocal polarization changer (see at least figure 1A, elements 120 and 160 as well as paragraph [0031] of Pan).

Response to Arguments

20. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to DEREK S. CHAPEL whose telephone number is (571)272-8042. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephone B. Allen can be reached on 571-272-2434. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. S. C./
Examiner, Art Unit 2872
8/29/2008

/Arnel C. Lavarias/
Primary Examiner, Art Unit 2872